

Remarks

In the Office action of November 12, 2009, claims 12 and 14 were rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement.

Regarding claim 12, the Office action states: "The specification only enables signaling based on two states of polarization." This assertion is not correct. Fig. 1 shows a transmitter (1-1) using a polarization maintaining combiner in combination with polarization controllers at the two inputs of the combiner. A polarization maintaining combiner may combine signals originating at its inputs that are of any state of polarization. Its main characteristic is that the state of polarization is maintained at its outputs. Hence, the transmitter described in Fig. 1 may be used for combining two signals of any polarizations -they do not have to be orthogonal- and outputting the combined signal into a single fiber. The polarization states of the signals will depend on the adjustment of the polarization controllers, which adjustment may, when found suitable, be adjusted during a transmission.

Regarding claim 14, the Office action states: "The specification does not teach how to use the change of states of polarization for the purpose of separating different QoS. In other words, there is no disclosure that establishes or explains how a change over time of two already distinct states of polarization could be the causal agent that separates-QoS not already separated." This assertion is not correct. Fig. 1 shows a receiver (1-2) using an automatic polarization controller in combination with a polarization beam splitter for splitting the received input into the modulated signal and QoS based on polarization. Response times of polarization controllers are relatively slow, and so are adapted for those slow polarization changes that are due to temperature changes

or physical movements of the fiber. The much more rapid changes in polarization, e.g., occurring between two packets, are detectable as amplitude changes as the output of the polarization beamsplitter. Whenever a polarization change corresponds to a change of a signal between two orthogonal states of polarization, the amplitude of the signal at the output of the polarization beamsplitter will change between zero and the amplitude of the corresponding input. However, if a polarization change does not correspond to a switching of the signal between two orthogonal states of polarization, then the respective signal amplitudes at the two outputs of the polarization beamsplitter will be a measure of the polarization state of the input signal. Hence, any change in polarization, not only between orthogonal polarization states, is detectable using the system in Fig. 1.

Accordingly, it should be seen that claims 12 and 14 do indeed meet the enablement requirement.

Claims 1, 2, 4-8, 18, 19, 21, 22, and 25-27 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kodialam et al. (US 2002/0018264) in view of Van Der Tol (US Pat. No. 5,900,957) and Handelsman (US 2003/0048506).

Applicant's previously presented arguments of July 16, 2009 in favor of patentability continue to apply as regards Kodialam et al. and Van Der Tol. However, the current Office action now also adds the Handelsman patent application.

Handelsman describes a method for resolving bandwidth contentions involving polarizing of packets orthogonally. The result is a doubling of the transfer rate for a wavelength band. This feature is described in par. [0076], [0093]-[0094], [0106], and [0268]-[0271] of Handelsman. In particular, where two optical packets A_1 and A_2 contend for bandwidth, selectors 910 (Fig. 10) direct those packets to corresponding polarizers 920 to obtain polarized optical packets A_{1p} and A_{2p} with different polarization directions, which

are then merged by a combiner 930 onto a single switched channel wavelength λ_1 . At the destination, an identical polarizing apparatus 900 works in reverse to separate the merged packets by polarization and route them over separate paths.

As with the other two applied references, Kodialam et al. and Van Der Tol, the Handelman application does not disclose any use of polarization for QoS labeling of packets. Instead, Handelman is using polarization for a completely different purpose, namely resolving contentions for the same wavelength. Unlike Handelman, the present claimed subject matter uses polarization as an optical label indicating a QoS value on a complete packet, providing strong binding between a state of polarization and a corresponding QoS value. This feature is not taught by any of the references including the newly cited Handelman application. Handelman relies upon its method of polarization multiplexing for combining two packets in order to achieve a doubling of the bandwidth and thereby solve contentions. This is unrelated to Applicant's polarizing of packets according to QoS of each packet.

Applicant amends independent claims 1 and 18 to further clarify the relation between polarization state and QoS value for a packet, indicating that the polarization state functions as a label for a packet's QoS value. The arguments presented herein, together with those previously presented on July 16, 2009, show that the claimed subject matter is not obvious in view of the cited prior art, none of which teaches what Applicant claims herein.

Regarding the rejected dependent claims 2, 4-8, 19, 21, 22, and 25-27, these are patentable for the same reasons given for independent claims 1 and 18. Additionally, regarding claim 6, the statement in the Office action that Van Der Tol teaches an electronic switching matrix is incorrect. Van Der Tol expressly states (col. 6, lines 52-55) that it is

an electronic control signal of a OPTICAL SWITCH, where the signal is switched optically, not electronically.

Regarding claim 7, this claim is amended, in accord with the description on page 10, line 23 of the application, so that not only the payload but a complete packet (header information, header and payload) of the first QoS class is separated by the router. This differs from the cited references which merely teach separating payloads from header information.

Regarding claim 25, Applicant continues to assert from its previously presented arguments of July 16, 2009 that Kodialam's sending of LSP requests in par. [0048], which are control packets, is fundamentally different from time division multiplexing of data packets (payloads and address fields). The cited references do not teach the feature recited in claim 25.

Regarding claim 26, Applicant continues to assert that Van Der Tol only describes the splitting of a packet's address and data fields according to those component's respective states of polarization. Van Der Tol does not teach SOP-aligning of received packets by a core node of an optical packet switched network. Such SOP-aligning involves both polarization demultiplexing of the received packets and subsequent polarization multiplexing (i.e., repolarization) of those packets in the same node. The benefits of repolarizing of the received complete packets is a regeneration of the state of polarization in the core node, and is neither taught nor suggested by Van Der Tol.

Regarding claim 27, Applicant continues to assert previous arguments that Van Der Tol does not teach reserving an output of a switch for a arriving packet of a first QoS class. While Van Der Tol does teach use of a fiber delay line (FDL) for delaying a packet payload (not the complete packet) to allow sufficient time for interpreting the packet's address

header and configures the switching matrix, this use of the FDL is for a completely different purpose from that of the present invention, where which of the outputs to use is predetermined and reserved for the packet independent of the address information. Our purpose is to allow already scheduled packets to finish transmitting. The arriving packet is delayed until the switch's output becomes vacant. Neither this nor the reserving of the output is taught by the cited references.

Claims 10 and 30 were rejected under 35 U.S.C. 103(a) as being unpatentable over Kodialam, Van Der Tol, and Handelsman, as applied to the claims above, in view of Xiaojun Fang (US 2003/0026250).

This is essentially a repeat of a previous rejection but with the addition of the newly cited Handelsman application publication. Claims 10 and 30 rely on independent claims 1 and 18 and the arguments given above apply here as well. Additionally, the previous argument of July 16, 2009 with respect to the distinctiveness of claims 10 and 30 over the Fang reference also continues to apply. Claims 10 and 30 are believed to be patentable.

Claims 3, 9, 11, 13, 15-19, 20, 23, 24, 28, 29, and 31 were objected to as being dependent upon a rejected base claim, but were indicated to be otherwise allowable if rewritten in independent form. Applicant thanks the Examiner for the indications of patentability, but declines to rewrite these claims at the present time in view of the amendments and remarks made herein.

Conclusion


Applicant requests reconsideration of the claims in view of the amendments and remarks made herein, as well as the arguments previously asserted. The claims are believed to be in condition for allowance. A Notice of Allowance is earnestly solicited.

The Examiner is invited to contact the undersigned attorney with any comments or questions at 408-297-9733 between 9:00 AM and 5:00 PM PST.

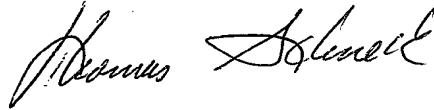
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